

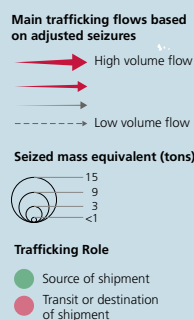


AFRICAN ELEPHANT TUSKS AND RHINOCEROS HORNS

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Map 1

⋮ Trafficking flow map - Elephant ivory (2014-2018)*



Source: UNODC World WISE Database *The year 2018 is based on partial data.

The boundaries and names shown and the designations used on this map do not imply official endorsement or acceptance by the United Nations. The final status of Jammu and Kashmir has not yet been agreed upon by the parties. Final boundary between the Republic of Sudan and the Republic of South Sudan has not yet been determined. A dispute exists between the Governments of Argentina and the United Kingdom of Great Britain and Northern Ireland concerning sovereignty over the Falkland Islands (Malvinas).

In the last *World Wildlife Crime Report*, elephant ivory and rhino horns were discussed separately. Ivory was discussed under the heading of “art, décor, and jewellery” and as an investment commodity. Rhino horn was classified as a traditional medicine, although it was already apparent at that time that it had also become a status item. In the last four years, the evidence has mounted that rhino horn is being sold for its artistic and investment value, so it is similar to ivory in this respect. The two commodities are sourced from different regions in Africa but require similar skills and equipment to procure. They also share many commonalities in their primary destination markets. For these reasons, the two species are considered together here.

The poaching of both elephants and rhinos appears to be in decline, as do the markets generally. For ivory, a downward trend since 2011 can be seen in the best available indicators of poaching, smuggling, and price. A similar, but more recent, trend can be seen with rhino horn poaching and prices, although seizures of rhino horns have continuously risen. A 2019 surge in very large seizures of both commodities may be related to the unloading of stocks in response to declining prices. This chapter reviews the data and discusses some explanations for these trends.

African elephant ivory

Ivory comes from elephants, particularly African elephants.¹ There are at

least two different ways to estimate the number of elephants poached in Africa, and thus the size of the illicit ivory supply entering the market annually. Elephant *population* estimates can be compared across time and *poaching* data can be modelled to estimate the number of elephants illegally killed:

- Population estimates can be compared between two assessment dates; after accounting for natural growth rate and taking into consideration other factors that may lead to unexpected mortality (such as drought), unexplained declines could be attributed to poaching.
- Detections of elephant poaching can be compared to detections



of elephants who died of other causes; based on natural mortality rates, the share of natural deaths detected can be estimated, and this share used to estimate the number of poaching deaths that occurred.²

How many elephants are being lost?

Elephant populations are studied by many independent scientists, and the results of these studies are compiled and analysed by the African Elephant Specialist Group (AfESG) of the International Union for the Conservation of Nature (IUCN). In addition to the regular scientific efforts, a concentrated study was conducted on savannah elephant populations using aerial surveys in 18 range states in 2015, dubbed “the Great Elephant Census”.³ The results of these surveys were integrated into the IUCN *African Elephant Status Report 2016* (AESR 2016).⁴ The AESR 2016 reports a strong decline in elephant populations based on estimates made in 2006 and 2015 (Figures 1 and 2).

The AESR 2016 estimated that there were just over 400,000 elephants in the areas surveyed⁵ and over 100,000 in the areas not systematically sur-

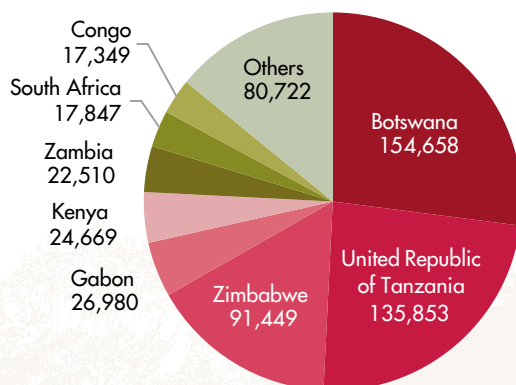
veyed,⁶ which combined cover 62 per cent of the known and possible elephant range. The AESR compared their 2015 figures to similar estimates made for 2006 and found that there had been a net decline in elephant populations of about 111,000 elephants in the areas comparably surveyed in the intervening years.⁷ This decline suggests that unexplained losses not only offset expected natural population growth (which would have left the population unchanged) but also reduced the continental elephant population by an average of about 10,000 elephants per year.

While not all the missing elephants were poached, available data show that poaching over the last decade undoubtedly accounts for a significant portion of the elephants killed,⁸ potentially resulting in some one thousand metric tons of illegal ivory over the decade, or an average of about 100 tons per year.⁹ Evidence discussed below suggests that the actual amount of poaching varied greatly between years, so in some years more than 10,000 were lost, and in some, less. This average only gives a sense of the order of magnitude of the illicit ivory supply entering the market in recent years.

Over half of this continental decline can be attributed to losses in the United Republic of Tanzania, where the estimated population declined from 135,853 in 2006 to 50,433 in 2015.¹² The elephant populations in the Selous and Ruaha reserves in Tanzania alone declined by nearly 75,000 elephants between 2006 and 2013. Since 2015, Tanzania has increased its efforts against poaching and trafficking, supported by NGOs. These efforts include actions undertaken through its National Ivory Action Plan (NIAP),¹³ as well as the undertaking of the ICCWC Analytic Toolkit on Wildlife and Forest Crime. Early indications are that this work is having some effect.

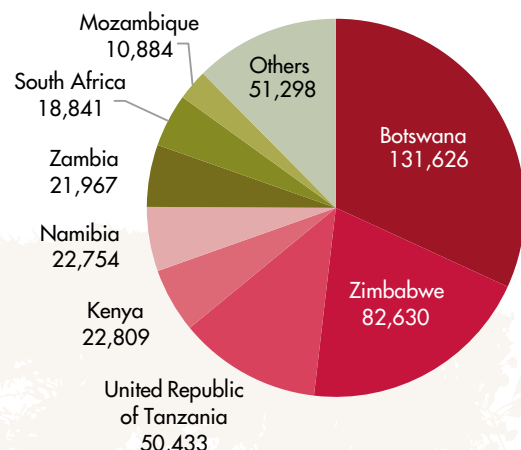
Other areas where the IUCN noted negative population trends associated with poaching included Gabon, Congo and Cameroon (home to the so-called TRIDOM range), as well as northern Mozambique (the Niassa range along the border with the United Republic of Tanzania and the Selous reserve) and parts of Kenya. Serious long-term declines were also noted in the populations of Central Africa¹⁴ as well as parts of Southern Africa (parts of Zimbabwe, Angola, and, to a lesser extent,

Fig. 1 : Estimated number of elephants residing in African countries in 2006 (556,973 elephants)¹⁰



Source: IUCN 2007

Fig. 2 : Estimated number of elephants residing in African countries in 2015 (413,242 elephants)¹¹



Source: IUCN 2016

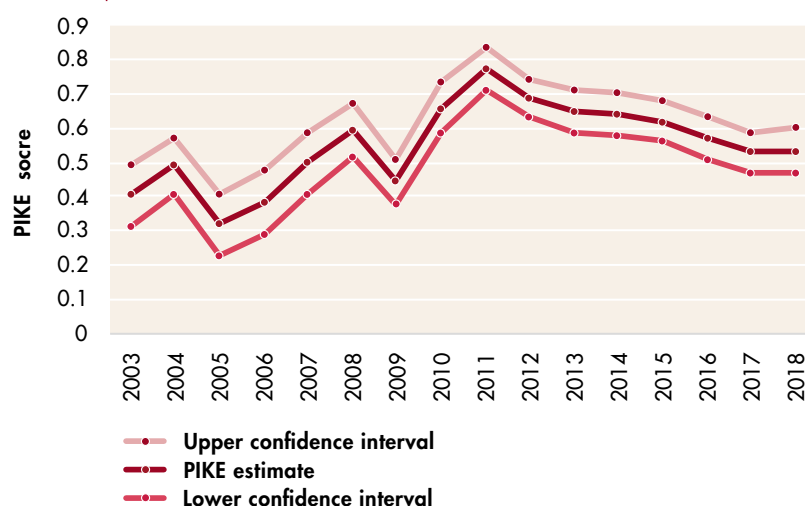
Zambia), which were attributed in part to poaching.¹⁵

These national population trends resonate with the findings of DNA research conducted on 28 major ivory seizures between 2010 and 2016.¹⁶ The majority of the seizures were traced back to two broad elephant populations: one extending from central Tanzania to northern Mozambique (including Selous and Ruaha), and one centred on the TRIDOM area (north-east Gabon, north-west Congo, and south-east Cameroon).¹⁷ They also align with the trafficking data, discussed below, which indicate East African (Mombasa) and West African (Lagos) hubs for illicit trade.

How many elephants are poached?

Another way of estimating the number of elephants poached (and thus the illegal ivory supply) is to extrapolate from elephant carcass data. Trends in elephant poaching are monitored by the CITES program “Monitoring the Illegal Killing of Elephants” (MIKE). Based on a network of over 60 sentinel sites, participating rangers report the number of dead elephants they detect and the share of these dead elephants that appear to have been illegally killed. According to CITES, the designated MIKE sites in Africa hold an estimated 30 – 40 per cent of the African elephant population.¹⁸ The “share of the detected elephant carcasses that have been illegally killed” is known as the Proportion of Illegally Killed Elephants (PIKE), and it is calculated at the subregional and continental levels, adjusted for sample variation.¹⁹ Since 2002, over 22,000 elephant carcasses have been so categorized, with between 1,000 and 2,000 observations per year between 2007 and 2018. Detections of both elephant carcasses and illegally killed elephants peaked in 2012, but the PIKE score was highest in 2011. Since then, it has declined every year until 2018, during which it increased by about 0.6 per cent.²⁰

Fig. 3 PIKE score for Africa, 2003–2018



Source: CITES MIKE

Box 1: Assumptions and limitations in the poaching-based estimate of illegal ivory supply presented in this report

Like any estimate of the size of a hidden population, the estimate of the number of illegally killed elephants presented in this chapter is based on certain assumptions and limitations. The reliability of the estimates is sub-

ject to the validity of these assumptions which concern the demography of elephants, the nature of the carcass survey, and the selection of the sites for observation:

<i>Demographic</i>	The baseline death and birth rates are derived from a few, increasing populations
	It is assumed that the age structure does not impact on elephant survival or reproduction
	No effect of ecologically good or bad years in elephant mortality is taken into account
	No feedback from illegal killing is included in the model
<i>Carcass survey</i>	Density dependent effects are not taken into account
	It is assumed there is no bias in the detection of natural versus illegally killed carcasses
	Patrol effort consistency across time is assumed
<i>Site selection</i>	It is assumed that the patrol effort is spatially representative of elephant distribution
	It is assumed that sites are representative of poaching levels in the region
	No ecological differences between sites are taken into account



If elephants dying of natural causes and elephants poached are equally likely to be detected, it is possible to use the PIKE scores, estimates of natural mortality, and population figures to estimate the number of elephants poached. Crudely put, the ratio of the proportion of the carcasses illegally killed to the proportion that died of other causes can act as a multiplier to the natural rate of mortality in the elephant population. This provides an estimate of the poaching rate, as long as these data are robust to the model assumptions (Box 1). This estimated poaching rate can then be multiplied by the population size to estimate the actual number of poached animals.²¹ This approach has been applied in the past to generate poaching estimates between 2010 and 2012²² and was extended to 2018 using updated population and PIKE data (Figure 4). These estimates suggest some 157,000 elephants were poached between 2010 and 2018, or an average of about 17,000 elephants per year.²³ They show a declining trend in poaching since 2011, rising again slightly in 2017 and 2018 (Figure 4).

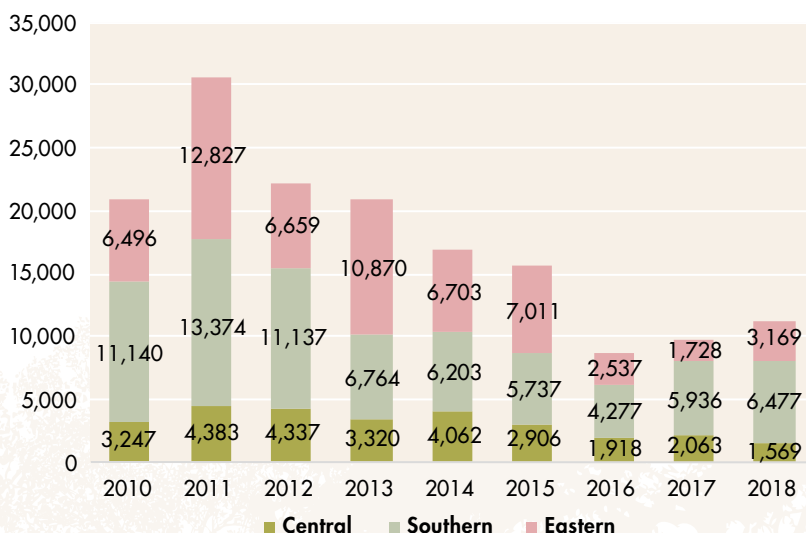
This analysis shows that the intensity of the poaching must be differentiated from the amount of illicit ivory produced. The PIKE score measures the

intensity of poaching, not the volume of poaching. A relatively low PIKE score in a large population could produce more illicit ivory than a high PIKE score in a small population. According to the PIKE-based analysis conducted for this report, Southern Africa, despite its low PIKE scores, was responsible for the largest share of the elephants poached between 2010 and 2018. Oddly, this composition is not reflected in the population data, the forensic data, or the trafficking data, which indicate an Eastern African source as predominant in recent years.

There could be several reasons for this inconsistency. It could be an issue of data quality for one or more of the considered indicators. It is also possible that some parts of Southern Africa, with its large elephant populations, have been an unrecognised source of elephant ivory. The low PIKE values and, therefore, low estimated rate of poaching in many Southern African populations may be sustainable, meaning the level of poaching does not drive a population decline. For instance, using the modelled demographic rates, it would be expected that the poaching of up to 4,000 elephants annually in northern Botswana would not cause a decline in the size of the population.²⁴

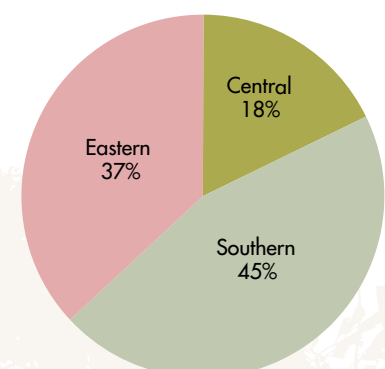
While not directly relevant for estimation purposes, aerial surveys, such as those conducted during the Great Elephant Census, can provide another indicator of poaching intensity: the “carcass ratio”. The total number of elephants detected (live and dead) can be compared to the number of carcasses observed. A “carcass ratio” of less than 8 per cent is said to be indicative of growing elephant populations.²⁷ Whether these elephants died of natural causes or were poached is impossible to determine from the air, and environmental conditions can affect the rate at which carcasses disappear. Still, the stark variation between countries with regard to the share of dead elephants detected in aerial surveys gives some indication of the variation in threats faced across the continent, and high shares of dead elephants relative to live elephants in Cameroon (83 per cent),²⁸ Mozambique (32 per cent), Angola (30 per cent) and the United Republic of Tanzania (26 per cent) show higher mortality risk in these areas. High carcass ratios, possibly indicating high poaching levels, were found in the northern section of Tsavo East National Park, Kenya (52 per cent carcass ratio), Niassa National Reserve, Mozambique (42 per cent), and Rungwa Game Reserve, Tanzania (36 per cent), areas also highlighted by the forensic data.²⁹

Fig. 4 Estimated annual numbers of illegally killed elephants in Central, Eastern and Southern Africa (median figures)



Source: UNODC²⁵

Fig. 5 Shares of estimated poached elephants in Africa, by subregion, 2010-2018



Source: UNODC²⁶

Looking at both population-based and poaching data-based estimates, it appears that between 10,000 (population loss average) and 17,000 (poaching estimate average) elephants were poached per year between 2006 and 2018, producing potentially between 100 tons and 170 tons of illicit ivory on average per year.

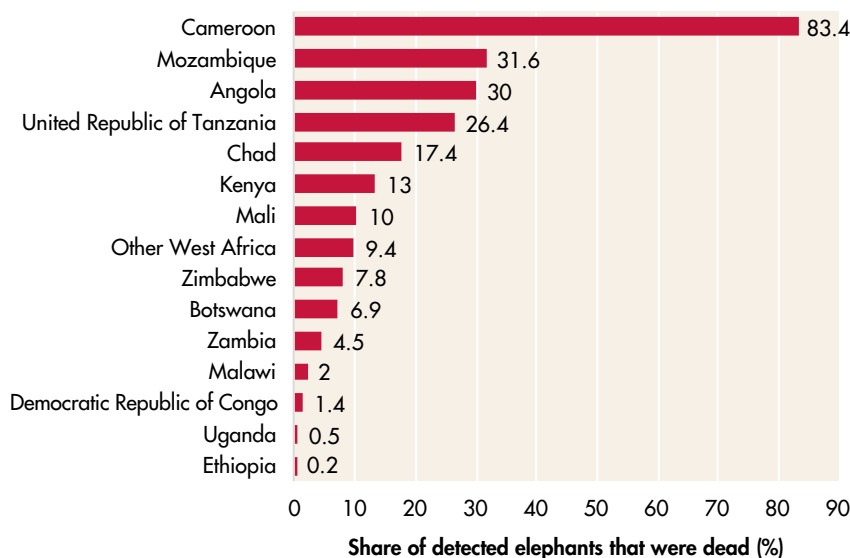
Based on both population modelling³¹ and the PIKE estimate, it appears that the illegal ivory supply has been declining since 2011. If demand is constant or growing, then a decline in supply would normally result in a rise in prices. But despite indications that the supply of ivory is declining, the price of ivory in Africa also appears to have declined since 2014. UNODC fieldwork conducted in 2018 in Kenya and the United Republic of Tanzania found that poachers were being paid between half and one-third of the price they were paid in 2014 (Figure 7). Reports from the field even suggested that some poachers were holding onto their tusks in hopes that the price would eventually rise.³²

Trafficking

Trafficking patterns can be detected through seizure records, but these do not give an accurate representation of the volume of the trafficking because it is not clear what share of the contraband flow is being seized, and this share can vary from year to year. This is particularly true with ivory seizures, where the total volume seized regularly doubles or halves year-on-year (Figure 8). Nonetheless, long term trends can be triangulated with other trend data to give an indication of market dynamics.

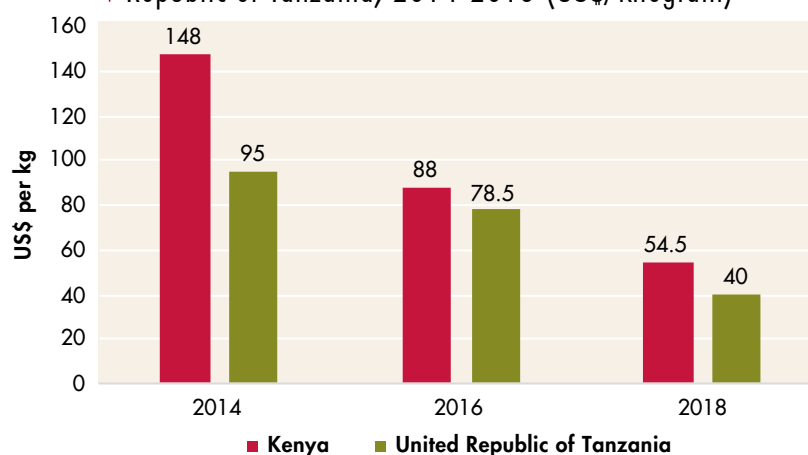
The official CITES data on elephant ivory seizures are maintained by TRAFFIC in the Elephant Trade Information System (ETIS). These raw data show the total annual weight of seizures reported to ETIS began to decline in 2013 and the number of seizures declined after 2011.³³ The trend parallels the decline seen

Fig. 6 : Estimated share of observed elephants that were dead in 2015 surveys (carcass ratio)



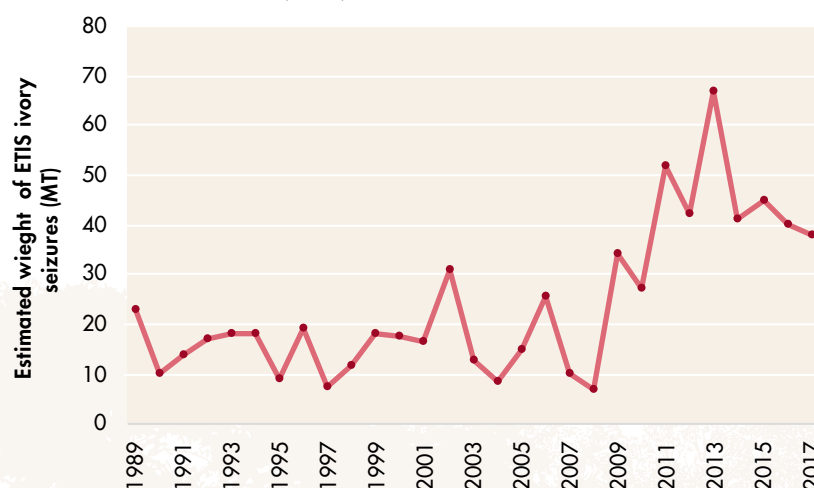
Source: Great Elephant Census³⁰

Fig. 7 : Ivory prices paid to poachers in Kenya and United Republic of Tanzania, 2014-2018 (US\$/kilogram)



Source: UNODC fieldwork

Fig. 8 : Estimated weight of ETIS-recorded ivory seizures, 1989-2017 (tons)



Source: ETIS.³⁴



in the poaching data: both indicate that ivory trafficking grew between 2007 and around 2011-2013 and has experienced an overall decline since that time.

If, as suggested above, an average about 100 tons to 170 tons of illicit ivory per year were generated between 2010 and 2018, the ETIS seizure figures suggest a high rate of interdiction: 17 to 35 per cent on average across the decade.³⁵

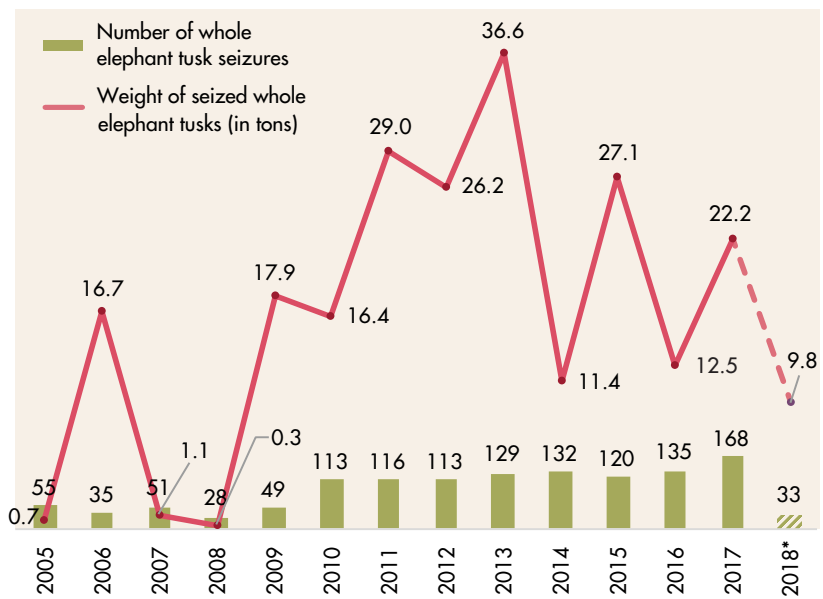
While it lacks the long time series, World WISE contains a comparable number of ivory seizures to ETIS in recent years. Looking just at tusks, the trend between 2007 and 2017 is similar to the ETIS raw data (Figure 9), with sharp growth between 2009 and 2013 and an uneven decline since then. Based on World WISE records of some 1,262 African elephant tusk seizures where an alleged destination was known, between 2005-2017, China and South-East Asia were the destination of 90 per cent of these shipments by weight (Figure 10). However, some of the countries listed as destinations in World WISE for illicit ivory shipments are highly likely to be transit countries. While

destination markets for raw ivory do exist outside South-East Asia and China,³⁶ it appears that almost all the illicit tusks detected are bound for this region.

Analysis using the latest data shows a different picture in the identified destination of illegal ivory shipments to that in the previous *World Wildlife*

Crime Report, with a growing role for countries like Viet Nam and Cambodia. For example, using data up to 2015, Viet Nam was the destination of about 3 per cent of total weight of ivory interdicted, but using recent data (2015-2019), the share has increased to 34 per cent. Recently, almost all the major seizures recorded in World WISE were destined for Viet

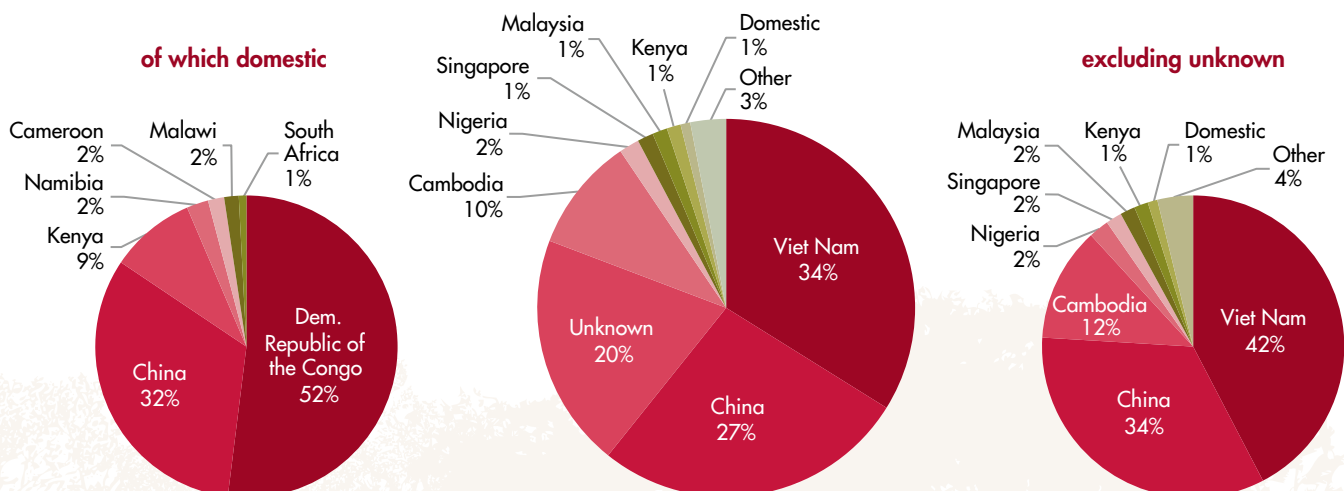
Fig. 9 Weight of elephant tusk seizures and total number of seizures captured in World WISE, 2005-2018 (tons)



Source: UNODC World WISE Database

*The year 2018 is based on partial data.

Fig. 10 Share of reported national destination of ivory tusk seizures, (total reported seizures 104 tons), 2015-2019³⁷



Source: UNODC World WISE Database

Nam and Cambodia,³⁸ although data in World WISE for 2018 and 2019 do not have the same coverage as previous years.

Just five large scale seizures made in 2019, totalling over 30 tons,³⁹ would make it a record year in terms of seizures, contradicting the downward seizure trend seen since 2014. Since poaching levels appear to be down, this suggests either improved interdiction (a higher share of the ivory flow being captured) or sourcing from stockpiles (not from recent illegal killings).

Forensic research suggests that a limited number of criminal groups may be responsible for a large share of the ivory seized (and, possibly, trafficked). This conclusion was reached by linking ivory shipments to a common trafficking organization when DNA from the same elephant was found in two seizures. A large share of the seizures tested could be thus linked together, suggesting as few as three or four major criminal groups were involved in the bulk of the trafficking.⁴⁰

Another trafficking trend of note is the growth of mixed seizures containing

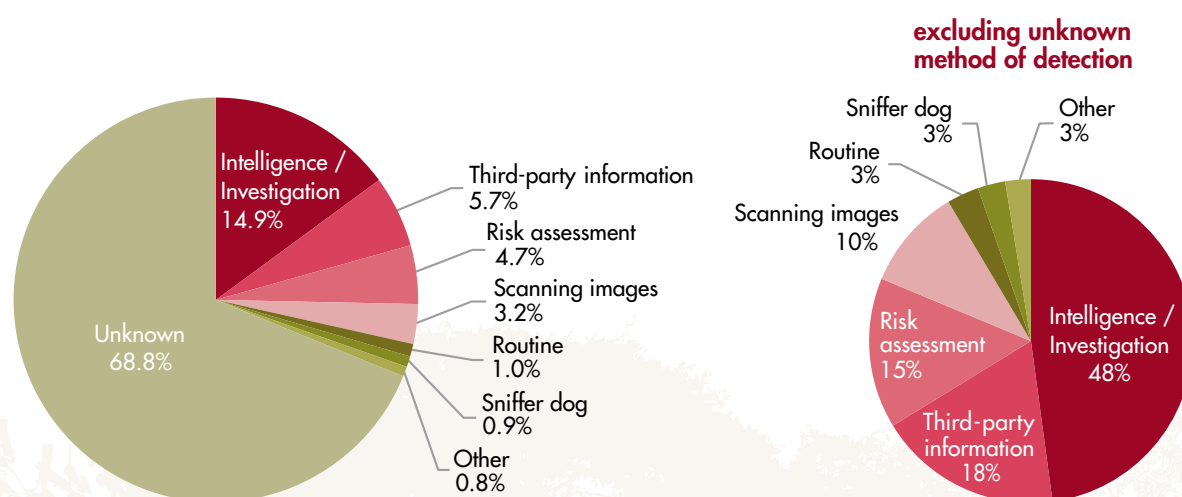
both ivory and pangolin scales, often in large volumes. For example, on 21 July 2019, the government of Singapore seized almost 12 tons of pangolin scales alongside almost nine metric tons of ivory – remarkably large quantities of both commodities – in a container coming from the Democratic Republic of the Congo on its way to Viet Nam, declared as timber. Wildlife seizures containing products of multiple species are fairly rare in World WISE, so this recent trend is worthy of attention. It is possible that ivory traffickers, facing declining demand, are taking advantage of their established networks to move a commodity for which demand is growing: pangolin scales. The *2019 West and Central Africa Wildlife Crime Threat Assessment* noted that interviewed poachers knew that hunting pangolins was illegal, but they felt this offence was taken less seriously than elephant poaching.⁴¹

Based on an analysis of 265 cases of ivory tusk seizures (accounting for 72 tons of ivory), made in 41 countries⁴² (where the reason for the seizure was reported), it appears that the vast majority were made due to investigations, risk-assessments, and tip-offs,

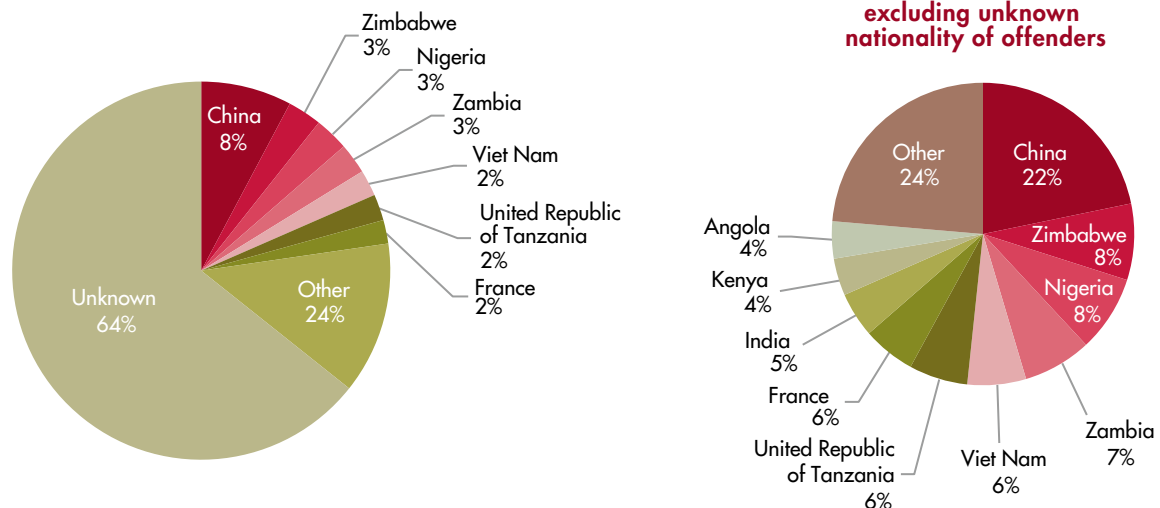
with only 3 per cent being found during routine inspections (Figure 11). This highlights the importance of intelligence-driven approaches and risk management practices in ivory interdiction. Countries that seize a lot of ivory do so because they have invested in finding it. Based on records involving the seizure of 144 tons of ivory tusks, China (specifically the Kwai Chung area of Hong Kong) and Viet Nam (specifically Hai Phong) lead the world in ivory seizures, followed by Port Klang in Malaysia and Mombasa in Kenya.

Based on those cases where the exact location of the seizure was specified, most of the tusks were seized at sea-ports, although private houses and airports were also frequent sites of tusk seizures. The majority of the tusks were found hidden in freight, although not all were concealed. Most seizures involving shipping containers do not present immediate opportunities for arrests but, based on 221 cases where arrests were reported in connection with the seizures, Chinese nationals were most frequently arrested, followed by Zimbabwean, Nigerian, Zambian, and Vietnamese nationals (Figure 12).

Fig. 11 Share of the most frequent method of detection in ivory tusk seizures (in mass equivalent), 2004-2018⁴³



Source: UNODC World WISE Database

**Fig. 12** : Citizenship of persons arrested in connection with ivory tusk seizures, 2009-2018⁴⁴

Source: UNODC World WISE Database

Destination markets

Numerous reports on Asian markets have indicated a decline in the price of illicit raw ivory tusks after 2014. This trend parallels the decline in price paid in Africa. Based on observational studies, prices in China almost tripled between 2010 and 2014, only to drop below their 2010 levels by 2018 (Figure 13). This declining trend was also reflected in price data gathered by the Chinese police in 50 law enforcement operations between 2015 and 2017 (Figure 14). These trends in China were paralleled by a decline seen by the Wildlife Justice Commission in 22 undercover price quotations in Viet Nam. The 2018 price observed in China (by TRAFIC) and Viet Nam (by WJC) are very similar, and both are similar to the price in 2010.

Another indicator of the decline of the ivory market comes from studies on the type of objects being offered for sale in markets in South-East Asia and China. Surveys conducted around 2014 in China noted the sudden presence of whole polished tusks in urban markets. The last *World Wildlife Crime Report* suggested that these were marketed to speculators more

interested in the raw material than the art or jewellery that could be made from it. Large carved art-pieces were also prominent in the Chinese market at this time. However, a 2017 survey of 22 cities in China found that 90 per cent of the illegal ivory objects offered for sale were small items, primarily jewellery.⁴⁸ This suggests that interest in buying raw ivory or large artworks for their investment value has declined, leaving only the retail market for trinkets. Of course, large investors in raw ivory were unlikely to buy from visible retail establishments even during peak demand, but the decline in visible high-value items is a significant indicator of the health of the market. It is also possible that sales have moved online, but physical markets remain important in this market. Recent surveys in China suggest only a small share of ivory buyers (17 per cent in 2018) bought ivory online, with most buying it in person either in China or while overseas.⁴⁹

The situation in South-East Asia appears to be similar. Today, the ivory markets in Viet Nam and Thailand seem largely limited to bangles, amulets, and other jewellery. A 2018 survey of 60 online sellers and 852 physical outlets in 13 locations in Viet

Nam found that 90 per cent of over 10,000 items reviewed were jewellery, and only the top 1 per cent were priced over US\$200.⁵⁰ The number of items viewed was fewer than a less extensive survey conducted in 2015, which also noted the lack of expensive items in the market.⁵¹ A 2016 survey of ivory markets in Bangkok found the number of objects observed for sale dropped sharply over an 18-month period between the end of 2014 and mid-2016 (Figure). Some 86 per cent of the objects observed were jewellery, and only 4 per cent were carved ivory, with the number of carved ivory objects dropping from 614 in December 2014 to just 10 in May 2016.⁵²

In Japan, which retains a legal domestic ivory market, most (80 per cent) ivory is used to produce *hanko* name seals,⁵³ though ivory is also worked into jewellery and other finished products often targeted at an international tourist clientele.⁵⁴ A survey of Japan's physical ivory market and auctions in 2018 found a strong reduction in the number of whole tusks offered for sale.⁵⁵

Thus, surveys conducted in the largest known ivory markets globally seem

to reflect a move toward a smaller number of smaller objects, consistent with an overall reduction in the volume of ivory available.

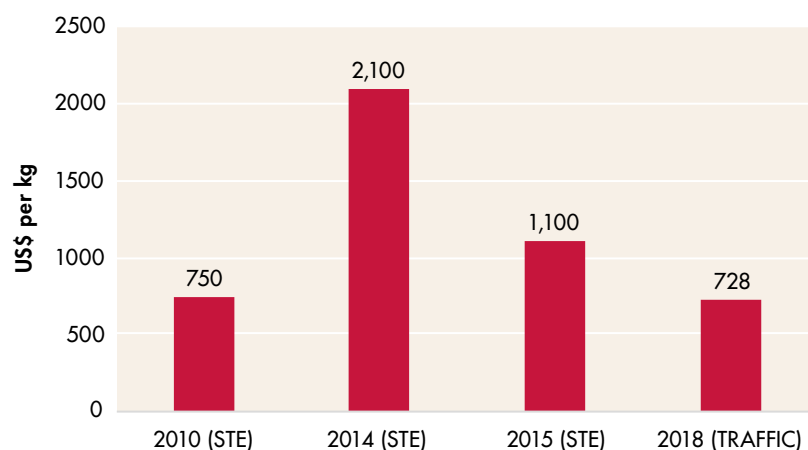
Trend analysis

The downward trend in supply and price is likely due to some combination of several factors. As discussed above, an average of around 100 to 200 tons of ivory had been entering the market annually since 2007. Ivory is a durable good, so unless the market continued to expand, at some point supply would exceed demand. The exact point when this occurred is unclear but was likely sometime between 2011 and 2015, and prices fell as the market adjusted.

The timing of this over-supply could have been influenced by a number of factors, including declining demand. One factor that surely affected demand was a radical change in the legal regime in some of the key legal ivory markets.

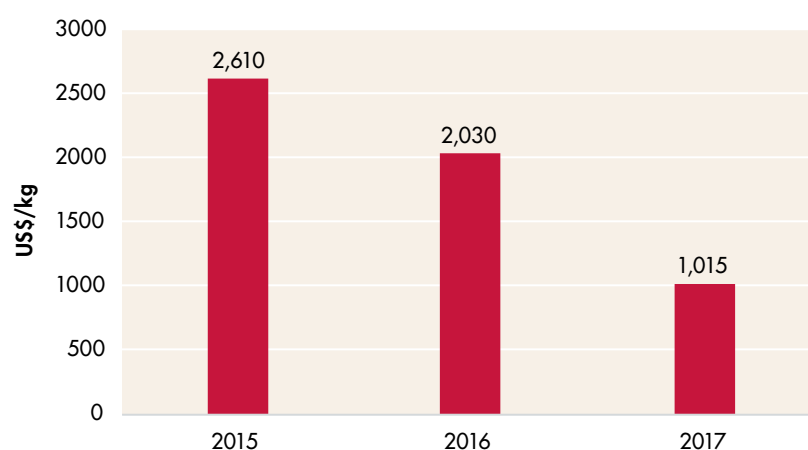
In December 2015, two of the largest ivory consumer markets globally – China and the United States of America – publicly committed to closing their legal domestic markets for ivory in the future.⁵⁶ Since the publication of the last *World Wildlife Crime Report*, this promise has been enacted in law in both countries. On 6 June 2016, the relevant rules under the United States Endangered Species Act were revised, prohibiting import, export, and interstate trade of African elephant ivory, with very limited exceptions.⁵⁷ On 30 December 2016, the Chinese government announced its decision to end the commercial processing and sale of ivory by the end of 2017.⁵⁸ In 2018, the Hong Kong Special Administrative Region of China also announced the implementation of a three-step plan to phase out the trade in elephant ivory by the end of 2021, and to impose heavier penalties to enhance deterrence of the illicit trade in endangered species.⁵⁹

Fig. 13 : Wholesale prices for illegal ivory in China, selected years (US\$/kilogram)



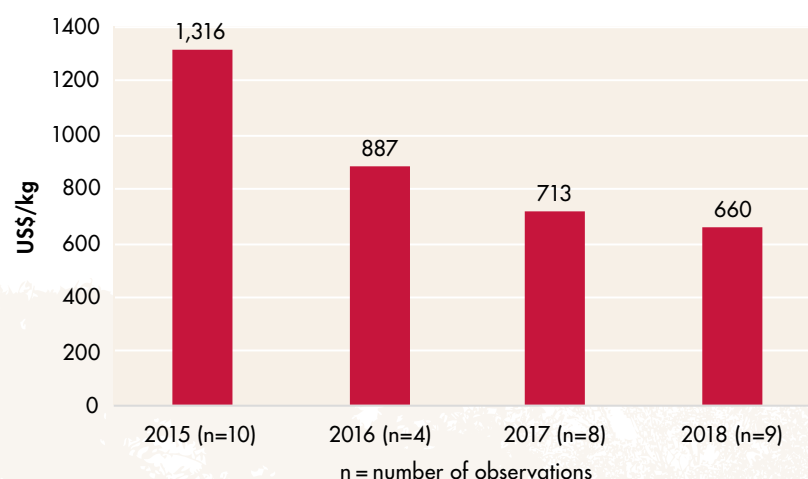
Source: Various sources.⁴⁵

Fig. 14 : Illegal raw ivory tusk price in China, 2015-2017 (US\$/kilogram)



Source: Chinese law enforcement, as reported by TRAFFIC.⁴⁶

Fig. 15 : Wholesale prices for illegal ivory in Viet Nam, 2015-2018 (US\$/kilogram)



Source: Wildlife Justice Commission.⁴⁷

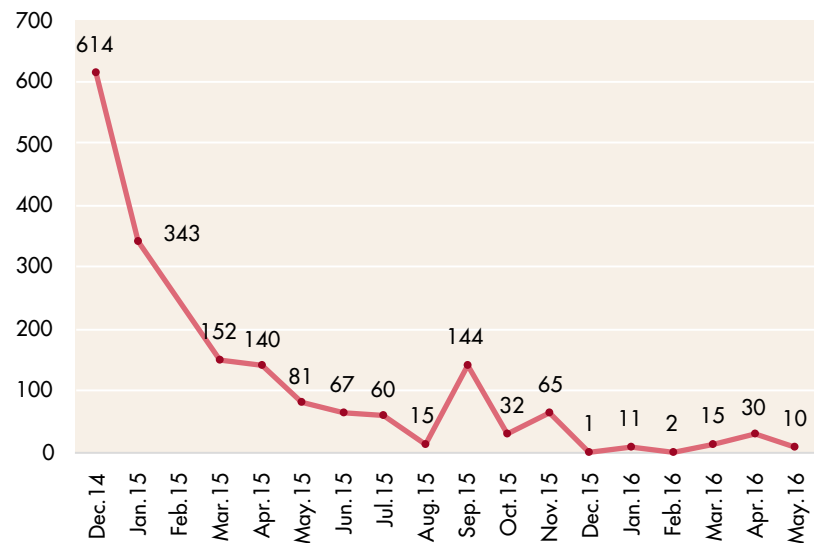


In addition, Thailand has taken significant measures to criminalize the trade of African elephant ivory. Thailand initiated a series of reforms at the beginning of 2015, including the listing of African elephants on the national protected species list, mandatory countrywide registration of privately-owned ivory objects and several other measures.⁶⁰ In response, some 40,000 people registered over 200 tons of ivory with the national authorities, underscoring the importance of Thailand as an important ivory market. Significant reduction in ivory for sale in the domestic market was observed in 2016.⁶¹ While not a ban on domestic sales, these measures appear to have dramatically reduced the visible retailing of ivory in Bangkok.⁶²

These restrictions in the legal market may have had an impact on the illegal one. Targeted surveys conducted in 2017 and 2018 in China found that many consumers have lost interest in ivory.⁶³ Even among those open to the purchase of ivory, the share that had purchased in the previous year declined. Some respondents said they saw owning ivory as shameful after the ban. In other words, the closing of the legal ivory market changed the way people view ivory as a product. Despite this shift, the survey found a contingent of die-hard ivory buyers, primarily affluent men who travelled abroad frequently and purchased the ivory while overseas.⁶⁴ In this way, tightened controls in China likely had the unintended consequence of displacing ivory markets into neighbouring countries.

It may be that speculation, not retail demand, was driving the poaching since 2007, as suggested by the previous *World Wildlife Crime Report*. Of course, by its nature, speculation is not directly tied to retail demand. The price of gold, for example, is not determined by trends in the retail jewellery market. But ivory's value as an investment may have declined relative

Fig. 16 Number of carved ivory objects identified in Bangkok, December 2014-May 2016



Source: TRAFFIC

to competing investment vehicles due to the tighter controls.

Once large investors began to sell, the cascading flood of ivory could have pushed the price for poached ivory down. One problem with the idea that tightened legal market controls undermined demand is the timing of the decline. These policy innovations only started in 2015. The data presented above suggest that poaching has been declining since 2011 and price has been declining since 2014. It may be that while poaching peaked in 2011, ivory trafficking only peaked in 2013 as suggested by seizure data or in 2015, as suggested by modelled ETIS data.

It is also possible that, as researchers have suggested,⁶⁵ prices began to drop in anticipation of the legal market ban. If the speculators knew in advance that market restrictions were forthcoming, they could have started dumping their ivory stocks in response. Buyers for this surplus could have been those who were directly involved in producing ivory artefacts: the carving factories. These buyers know what retail ivory objects can be sold for, so the price they were

willing to pay would be much lower than the speculative price paid in 2014. Thus, the illicit market wholesale price as reported by market observers in 2018 is about the same as that observed before the boom in 2010: about US\$750 per kilogram.⁶⁶

Based on just the five major seizures cited above, it appears the global seizure trend will reverse in 2019. Poaching data for 2019 are not yet available but would have to reverse starkly to match the seizure trend. Unless evidence of renewed poaching emerges, this suggests either an increase in interdiction rate or the use of stocks rather than freshly poached elephants.



Box 2. Helmeted hornbill ivory: “Red ivory”

Despite its CITES Appendix I listing since 1975, escalating demand for hornbill ivory in recent years has contributed to the up-listing of the Helmeted hornbill (*Rhinoplax vigil*) from a “Threatened” IUCN Red list status in 2012 to a “Critically Endangered” status in 2015.^a Also known as red ivory, golden jade, or “ho-ting,” the hornbill’s casque has long been considered a natural ivory substitute.^b Unlike elephant, hippo and walrus ivory, which are dentine material, the casque of the helmeted hornbill is made of solid keratin.^c The casque is orange-yellow in its raw appearance with a thin red outer layer on the upper portion, which may disappear once polished.^d It is softer than elephant ivory and relatively easy to carve.^e

After being listed on CITES Appendix I, the international market for helmeted

hornbill ivory all but collapsed, with relatively low volumes of illegal trade occurring until sometime around the early 2010s. Hornbill ivory is reportedly worth five times that of black-market elephant ivory by weight.^f During 59 separate events between 2010 to 2017, 2,878 casques, worth US\$3 million were seized.^g

Most seizures occurred in Indonesia (a range State) and China (a destination market), peaking in 2012 and 2013.^h Between 2014 and 2016, Indonesia reported at least 48 poaching cases in Sumatra (primarily in Leuser and Bukit Barisan Selatan National Parks)ⁱ and by 2016, Indonesian authorities had confiscated 1,398 casques in 25 seizures.^j Poachers in Indonesia have confirmed the existence of organized crime networks in the trade, also targeting other

species such as tigers and pangolins.^k There have also been reports of seizures in Malaysia and Thailand.^l The seizure of 72 helmeted hornbill casques at Soekarno Hatta Airport (Jakarta) in July 2019 highlights that illegal trade is still occurring.^m

There are still many unknowns about the illegal trade in helmeted hornbill. Of special importance given current ivory poaching trends, is whether and how much a decline in ivory supply could lead poachers to source helmeted hornbill as a possible replacement product, whether consumers would accept such a change, and if non-wild sources could meet a possible shifted demand to this substitute.

a BirdLife International. *Rhinoplax vigil*. The IUCN Red List of Threatened Species 2018: e.T22682464A134206677 (2018).

b Liang, J., Li, H., Lu, T., Zhang, J., Shen, M. & Zhou, J., ‘Identification characteristics of natural and imitation hornbill ivory’, *J. Gemmology* 34: 42–49, 2014; Espinoza, E. O. and Mann, M.-J., *Identification guide for ivory and ivory substitutes*. Geneva, Switzerland: CITES Secretariat, 1999; Kane, R.E., ‘Hornbill ivory’, *Gems and Gemology*, pp. 96–97, 1981.

c Kane (1981); Liang *et al.* (2014) *ibid.*; CITES CoP 17, Doc. 69, *Illegal trade in the Helmeted Hornbill* (*Rhinoplax vigil*), 2016.

d Liang *et al.* (2014); Kane (1981).

e Liang *et al.* (2014); CITES (2016).

f Environmental Investigation Agency, *Seeing ‘red’ – the often-hidden colour of wildlife contraband*, 2015 (available at: <https://eia-international.org/news/seeing-red-the-often-hidden-colour-of-wildlife-contraband/>).

g Jain, A., Lee, J. G. H., Chao, N., Lees, C., Orenstein, R., Strang, B. C., Chang, S. C. L., Marthy, W., Yeap, C. A., Hadiprakarsa, Y. Y. and Rao, M. (Eds), *Helmeted Hornbill (Rhinoplax vigil): Status Review, Range-wide Conservation Strategy and Action Plan (2018–2027)*. IUCN Species Survival Commission Hornbill Specialist Group, 2018.

h Jain *et al.* (2018); Beastall, C., Shepherd, C.R., Hadiprakarsa, Y. and Martyr, D., ‘Trade in the Helmeted Hornbill *Rhinoplax vigil*: the ‘ivory hornbill’’, *Bird Conservation International* 26(2): 137–146, 2016.

i CITES, 69th meeting of the Standing Committee (SC69), Document 61 (Rev. 1), *Species specific matters. Illegal trade in the helmeted hornbill (Rhinoplax vigil): Report of the Secretariat*, 2017.

j CITES (2017); Indonesia Ministry of Environment (Kementerian Lingkungan Hidup dan Kehutanan), *Strategi dan Rencana Aksi Konservasi Rangkong Gading (Rhinoplax vigil) Indonesia 2018–2028*, Jakarta, Indonesia: KLHK (available

at: http://ksdae.menlhk.go.id/assets/publikasi/SRAK%20Rangkong%20Gading_Published.pdf).

k Beastall *et al.* (2016).

l Jain *et al.* (2018).

m Indonesia Ministry of Environment and Forestry (KLHK), KLHK Gagalakan Penyelundupan 72 Paruh Burung Rangkong ke Hongkong. [In Indonesian]. Press release. Nomor: SP. 261/HUMAS/PP/HMS.3/7/2019 (available at: http://ppid.menlhk.go.id/siaran_pers/browse/1997#).



Endnotes

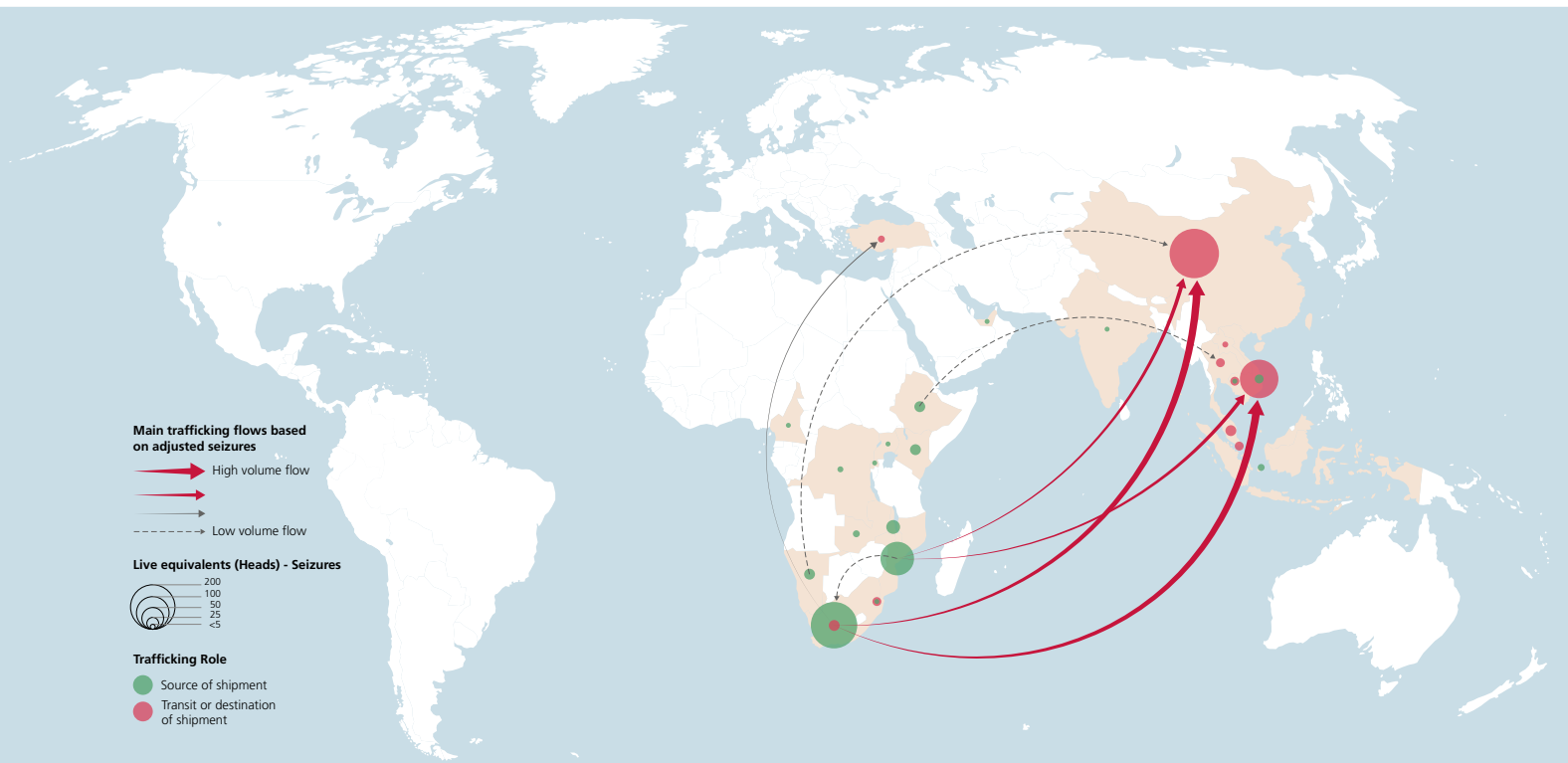
- 1 This chapter focuses on African species of elephants and rhinoceros, although there are Asian species of both animals. Although Asian elephants and rhinos are also subject to poaching, seizures indicate that the illegal trade is presently dominated by the flow from Africa to Asia. For the purposes of precision and simplicity, the chapter focuses on this dominant flow.
- 2 There are about half a million African elephants left and every year some of them die of natural causes. Due to its recognized value, their ivory is usually stockpiled by the state. Ivory is a durable good and can last for centuries, so stockpiles naturally accumulate. Since international trade in ivory is not allowed for CITES parties, these stockpiles can be a source of illegal supply. In addition, every year thousands of elephants are illegally killed for their ivory. Since it is this killing that is of concern to conservationists, this chapter focuses on the illegal ivory supply from elephants that have been poached.
- 3 Chase, M., Schlossberg, S., Griffin, C., Bouché, P., Djene, S., Elkan, P., Ferreira, S., Grossman, F., Kohi, E., Landen, K., Omondi, P., Peltier, A., Selier, S. and Sutcliffe, R., 'Continent-wide survey reveals massive decline in African savannah elephants'. *Peer J*, Vol. 4, No. 2354, 2016.
- 4 Thouless, C., Dublin, H., Blanc, J., Skinner, D., Daniel, T., Taylor, R., Maisels, F., Frederick H. and Bouché, P., *African Elephant Status Report 2016: an update from the African Elephant Database*, Occasional Paper Series of the IUCN Species Survival Commission, No. 60 IUCN/SSC Africa Elephant Specialist Group, IUCN, 2016.
- 5 $415,428 \pm 20,111$. See IUCN 2016, op. cit. p. 29. These estimates are based on the latest population surveys available in the scientific literature, extensively vetted for reliability by the top authorities in the field, and therefore represent the best available data on elephant populations.
- 6 117,127 to 135,384, *ibid*.
- 7 The report notes that some new populations were found in areas surveyed for the first time, reducing the difference between two estimated number of elephants based on surveys to about 93,000.
- 8 CITES SC69 Annex document, p. 15.
- 9 There is a great need for an updated estimate of the amount of ivory carried by each elephant, which could be done through the centralized ivory stockpile databases held by several Member States. Although several figures have been used, the traditional yield has been estimated at 1.8 tusks per elephant and about 5.5 kg per tusk, resulting in an average of about 10 kg ivory per elephant. See Martin, R., Cumming, D., Craig, G., Gibson, D. and Peake, D., *Decision-Making Mechanisms and Necessary Conditions for a Future Trade in African Elephant ivory: Final Report* (CITES SC62 Doc. 46.4 Annex A), 24 May 2012, p. 16.
- 10 Combined "definite" and "probable" estimates; does not include "possible" or "speculative" estimates.
- 11 Does not include guesses or uncertainty range.
- 12 IUCN 2016 op. cit. p.3.
- 13 Such as the development of a National Anti-Poaching Strategy, the creation of a National Taskforce on Anti-Poaching, an increase in intelligence-led investigations, increased prosecution, and steep sentences for wildlife trafficking. Tanzania exited the NIAP process in 2019. See CITES, 71st meeting of the Standing Committee (SC71), Document 11, Annex 1: National Ivory Action Plan (NIAP) process: Implementation of Step 1 of the Guidelines to the NIAP process - Identification of Parties to participate in the NIAP process.
- 14 Chad, Central African Republic, the Democratic Republic of the Congo and Equatorial Guinea.
- 15 IUCN 2016, op. cit. Parts of this region were also seriously affected by drought during this period.
- 16 According to CITES Resolution Conf. 10.10, *Trade in elephant specimens*, all ivory seizures over 500 kg should be submitted to forensic analysis but it appears that only 20% to 25% have been.
- 17 Wasser, S., Brown, L., Mailand, C., Mondol, S., Clark, W., Laurie, C. and Weir, B., 'Genetic assignment of large seizures of elephant ivory reveals Africa's major poaching hotspots', *Science*, Vol. 349 No. 6243, 2015. In TRIDOM, areas affected include the Minkébé National Park in Gabon, the Mengame Wildlife Sanctuary, the Abong-Mbang Forest Reserve, Bénoué National Park, Bouba Ndjidah National Park, Faro National Park, and the Yoko area in Cameroon. Using Cameroon as an example, the Mengame Wildlife Sanctuary was estimated in 2003 to have more than 1,000 elephants; the 2011 revision was 10. In addition, poaching around 2012 appears to have virtually wiped out the savanna elephant populations of northern Cameroon. Reserves that had previously held elephants with a zero population estimate in 2016 include Abong-Mbang Forest Reserve, Bénoué National Park, Bouba Ndjidah National Park, Faro National Park, and the Yoko area. See IUCN 2007 and IUCN 2016 op. cit.
- 18 CITES CoP18 Doc.69.2 (2019), *Species specific matters: Elephants (Elephantidae spp.), Report on Monitoring the Illegal Killing of Elephants (MIKE)*.
- 19 See online data repository, which contains R script for analyses of data from the Monitoring the Illegal Killing of Elephants (MIKE) Programme to produce outputs for reports to CITES (<https://github.com/CITES-MIKE/MIKE-LSMEANS>).
- 20 That is, from a revised PIKE of 0.52948 in 2017 to 0.53544 in 2018, for an increase of 0.00596. However, 2018 also had the smallest overall carcass count since 2010: 1314, compared to an average of 1780 between 2011 and 2017.
- 21 The method used here is explained in detail in the Methodological Annex.
- 22 Wittemyer, G., Northrup, J. M., Blanc, J., Douglas-Hamilton, I., Omondi, P. and Burnham, K. P., 'Ivory poaching drives decline in African elephants', *Proceedings of the National Academy of Sciences*, Vol. 111, No. 36, 2014.
- 23 Wittemyer, G., 'Revisiting estimates of elephant poaching across Africa', Working Paper prepared for UNODC, 2018. Available in the online Methodological Annex.
- 24 Wittemyer, G., 2020, *in litt*.
- 25 Analysis performed by George Wittemyer for UNODC (full paper available in the Methodological Annex). PIKE data from West Africa were insufficient for an estimate to be produced. Based on estimated poaching of over 150,000 elephants.
- 26 *Ibid*.
- 27 Chase, M., Schlossberg, S., Griffin, C., Bouché, P., Djene, S., Elkan, P., Ferreira, S., Grossman, F., Kohi, E., Landen, K., Omondi, P., Peltier, A., Selier, S. and Sutcliffe, R., 'Continent-wide survey reveals massive decline in African savannah elephants'. *Peer J*, Vol. 4, No. 2354, 2016. See also Douglas-Hamilton, I. and Burrill, A., 'Using Elephant Carcass Ratios to Determine Population Trends'. *African Wildlife: Research and Management*, 1991, pp. 98—105.
- 28 This very high share was based on a very small observed elephant population (148). Most of Cameroon's elephants are forest elephants, which are difficult to view from the air.
- 29 Chase et al. 2016, op. cit.
- 30 *Ibid*.
- 31 Martin, R., Cumming, D., Craig, G., Gibson, D. and Peake, D., *Decision-Making Mechanisms and Necessary Conditions for a Future Trade in African Elephant ivory: Final Report* (CITES SC62 Doc. 46.4 Annex A), 24 May 2012, p. 16.
- 32 UNODC fieldwork conducted in 2018 in Kenya and the United Republic of Tanzania. See online Methodological Annex for details.
- 33 In addition to these raw data, ETIS models intended to address bias found a later peak, in 2015. See CITES CoP18 Doc.69.3 (2019), *Species specific matters: Elephants (Elephantidae spp.), Report on the Elephant Trade Information System (ETIS)*.
- 34 Milliken, T., Underwood, F., Burn, R. and Sangalakula, L., *The Elephant Trade Information System (ETIS) and the Illicit Trade in Ivory: A report to the 18th meeting of the Conference of the Parties to CITES*, CoP18 Doc. 69.3 (Rev. 1) Annex 1, December 2018.
- 35 Interdiction rate is usually estimated at the level of 10-15 per cent. To get lower interdiction rates with the same seizure estimates, the total amount of new illegal ivory generated would need to be increased, either by increasing the yield per animal above 10 kg or increasing the number of animals poached above 20,000. It is also possible that seizures are exaggerated by incorrect weight imputation.

- 36 The “other” countries indicated include Kenya, Philippines, Sudan, United Arab Emirates, France and the United States.
- 37 The data for 2018 and 2019 are not complete.
- 38 For example, in December 2018, Cambodian customs seized 1,026 tusks (3.2 MT) at the Phnom Penh port in a shipping container from Mozambique that was never claimed. In January 2019, 2.1 MT of tusks were seized by China at Hong Kong, China, coming from Nigeria on their way to Viet Nam, alongside 8.2 MT of pangolin scales. Also that month, Uganda seized 3.3 MT of ivory alongside pangolin scales crossing into South Sudan on its way to Viet Nam, arresting two Vietnamese nationals. In March 2019, 9.1 MT ivory were seized by Viet Nam coming from the Democratic Republic of the Congo, one of the largest ivory seizures ever made. In April, the Mozambican tax authorities seized 867 pieces of ivory weighing 3.4 MT in a container of plastic waste destined for Cambodia. In July 2019, 8.8 MT of ivory was seized by Singapore coming from the Democratic Republic of the Congo to Viet Nam (alongside 11.9 MT of pangolin scales). Large amounts of ivory continue to be seized in China, such as the March seizure of 7.48 MT ivory by Chinese authorities in the village of Gaogou, Anhui, from a group that smuggled from Nigeria.
- 39 Ibid.
- 40 Wasser, S., Torkelson, A., Winters, M., Horeaux, Y., Tucker, S., Otiende, M., Sitam, F., Buckleton, J. and Weir, B., ‘Combating transnational organized crime by linking multiple large ivory seizures to the same dealer’, *Science Advances*, Vol 4, no. 9, eaat0625, 2018.
- 41 See CITES CoP 18, Doc. 34 (2019), *Interpretation and implementation matters: General compliance and enforcement: Wildlife crime enforcement and support in West and Central Africa*.
- 42 Out of 1,176 ivory tusk seizures in World WISE.
- 43 2018 data are not complete.
- 44 2018 data are not complete.
- 45 “STE” stands for “Save the Elephants” and refers to surveys conducted by Vigne and Martin. Martin, E. and Vigne, L., *The Ivory Dynasty: A Report on the Soaring Demand for Elephant and Mammoth Ivory in Southern China*, Elephant Family, The Aspinall Foundation and Columbus Zoo and Aquarium, 2011; Vigne, L. and Martin, E., *China faces a conservation challenge: The expanding elephant and mammoth ivory trade in Beijing and Shanghai*, Nairobi: Save the Elephants and Aspinall Foundation, 2014; Vigne, L. and Martin, E., *Decline in the Legal Ivory Trade in China in Anticipation of a Ban*, Nairobi: Save the Elephants, 2017. Yu Xiao, *China’s Ivory Market after the Ivory Trade Ban in 2018*, Beijing: TRAFFIC, 2018.
- 46 Yuankun Zhao et al 2018 op cit
- 47 Data transmitted directly from WJC, 19 April 2019.
- 48 Yuankun et al 2017 op cit.
- 49 Meijer, W., Scheer, S., Whan, E., Yang, C. and Kritski, E., *Demand under the Ban – China Ivory Consumption Research Post-ban 2018*, Beijing: TRAFFIC and WWF, 2018.
- 50 Nguyen, M. D. T., Indenbaum, R. A. and Willemsen, M., *From Tusk to Trinket: Persistent illegal ivory markets in Viet Nam*. Ha Noi: TRAFFIC, 2018.
- 51 Vigne and Martin observed 16,099 ivory items at 242 open outlets in six locations. See Vigne and Martin 2016, op cit.
- 52 Krishnasamy, K., Milliken, T. and Savini, C., *In Transition: Bangkok’s Ivory Market – An 18-month survey of Bangkok’s ivory market*. TRAFFIC, Southeast Asia Regional Office, Petaling Jaya, Selangor, Malaysia, 2016.
- 53 Martin, E. and Stiles, D., *The Ivory Markets of East Asia, Save the Elephants*, 2003.
- 54 Kitade, T. and Nishino, R., *Ivory Towers: An assessment of Japan’s ivory trade and domestic market*, TRAFFIC, Tokyo, Japan, 2017.
- 55 Kitade, T. and Nishino, R., *Slow Progress: A Reassessment of Japan’s Ivory Market in 2018*, TRAFFIC, Tokyo, Japan, 2018. According to data from Japan’s Ministry of Environment, as of the end of 2019, Japan had a registered stockpile of 181 metric tons of whole tusks and an additional 68.7 metric tons of cut pieces of raw ivory.
- 56 The White House, Office of the Press Secretary, *Fact sheet: President Xi Jinping’s State Visit to the United States*, 25 September 2015; State Council of China, *Notice of the General Office of the State Council on Orderly Stopping Commercial Processing and Sales of Ivory and Products*, Notice 103 of 2016, 30 December 2016 (available at: http://www.gov.cn/zhengce/content/2016-12/30/content_5155017.htm).
- 57 50 CFR Part 17, “Endangered and Threatened Wildlife and Plants; Revision of the Section 4(d) Rule for the African Elephant (*Loxodonta africana*); Final Rule”. *Federal Register*, Vol. 81, No. 108, Monday, June 6, 2016.
- 58 State Council of China, *Notice of the General Office of the State Council on the Orderly Stopping of Commercial Processing and Sales of Ivory and Products*, Notice 103 of 2016, 30 December 2016.
- 59 CITES, Notification to the parties, No. 2018/057, China: Stricter domestic measures on ivory trade in Hong Kong Special Administrative Region, China, 1 June 2018 (available at: <https://www.cites.org/sites/default/files/notif/E-Notif-2018-057.pdf>).
- 60 See Annex 1 to document SC66 Doc. 29 (Rev. 1) pg. 29 and 30: <https://cites.org/sites/default/files/eng/com/sc/66/E-SC66-29-Rev1.pdf>.
- 61 CITES, 69th meeting of the Standing Committee (SC69), Document 29.3, paras. 122-127: *National ivory action plans process: report of the Secretariat*.
- 62 Krishnasamy, Milliken and Savini, 2016, op cit.
- 63 Meijer, W., Scheer, S., Whan, E., Yang, C. and Kritski, E., *Demand under the Ban – China Ivory Consumption Research Post-ban 2018*, Beijing: TRAFFIC and WWF, 2018.
- 64 Ibid.
- 65 Vigne and Martin 2017, op cit.
- 66 See the price trend discussion above.



Map 2

Trafficking flow map - African rhinoceros horns (2014-2018)*



Source: UNODC World WISE Database *The year 2018 is based on partial data.

The boundaries and names shown and the designations used on this map do not imply official endorsement or acceptance by the United Nations.

A dispute exists between the Governments of Argentina and the United Kingdom of Great Britain and Northern Ireland concerning sovereignty over the Falkland Islands (Malvinas).

Rhinoceros horn

African rhinos differ from African elephants in that there are far fewer of them, and they are far more concentrated geographically.¹ For every remaining African rhino (about 25,000 of them) there are perhaps 20 African elephants, and while it takes five countries to comprise three-quarters of the remaining elephants, 75 per cent of the remaining rhinos can be found in just one: South Africa. South Africa has been so successful in breeding rhinos that it has managed to export 538 live rhinos since 2014, feeding growing wild and captive populations in other countries. Drought and poaching have caused South Africa's rhino population to decline since 2012, however, driving down the overall continental population.²

Around 7,500, or over 40 per cent, of South African rhinos are privately owned by ranchers and private game

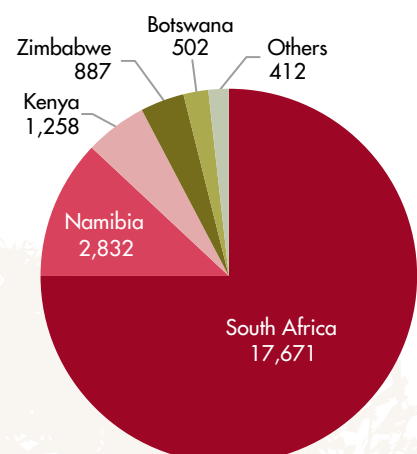
reserves.³ These operations have weathered a decline in the price of a live rhino by two-thirds between 2007 and 2018.⁴ While legal prices have declined, the threat of poaching has imposed substantial security costs for rhino ranchers.⁵ In this way, the illegal trade poses an additional threat to rhino populations: it threatens to make these private holdings unsustainable.

Poaching

Similar to ivory, there have recently been indications of a decline in the market for rhino horn, as both supply (poaching) and price indicators are declining. South Africa, which experienced 86 per cent of the recorded poaching incidents between 2006 and 2017, has seen a declining trend in its poaching numbers every year since 2014. In 2019, the number of poaching incidents decreased to 594, the lowest level since 2011.

Anecdotal data gathered on prices paid to poachers historically in Kenya, the United Republic of Tanzania and South Africa in 2018 were erratic and showed no clear trend. The consensus among experts interviewed, however,

Fig. 17 Estimated numbers of rhinoceroses by country in 2017



Source: IUCN

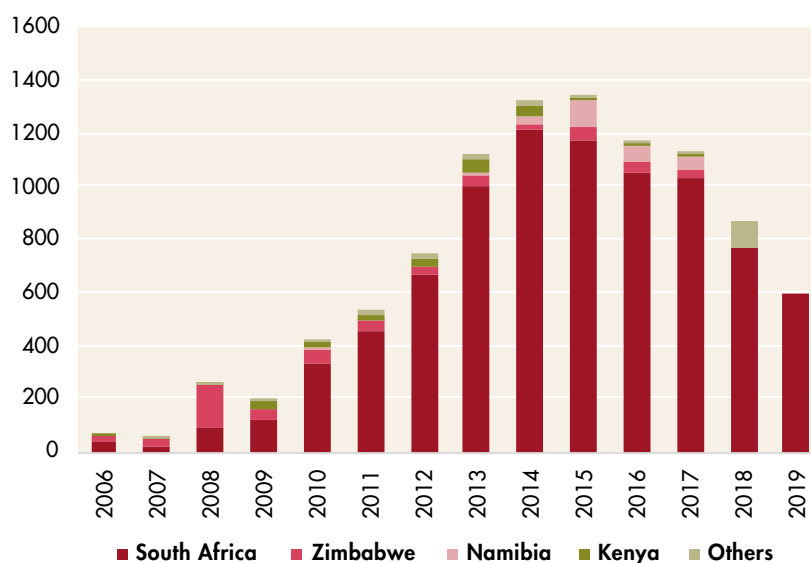
was that the price increased dramatically between 2013 and 2014 and had declined since then (Figure 19).

Trafficking

World WISE shows a strongly increasing trend in the number and weight of rhino horns seized, from 16 seizures in 2008 to 105 in 2017 (Figure 20). This trend stands in contrast to the declining number of poaching incidents and suggests increased enforcement has resulted in a higher share of the illicit flow being captured⁷ or that some of the horn being seized is flowing from either public or private stockpiles. Based on World WISE data between 2014 and 2019 where the final destination was known,⁸ accounting for about two tons of horn, more than three-quarters of the weight of horn was destined for China and Viet Nam. (Figure 21). Many of the seizures made in South Africa were domestic; the intended destination of this horn was unknown.

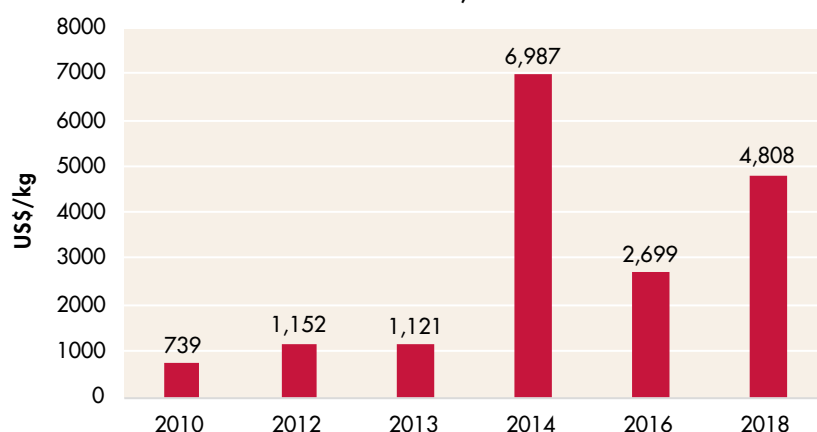
Because rhino horn is relatively portable and value intensive, the vast majority is trafficked by air in luggage and personal carry-on (sometimes wrapped in tinfoil) and is seized at airports with a relatively large number of seizures involving arrests. According to World WISE data for the period 2010 to 2017, Chinese (including 24 suspects in 2017 alone), Vietnamese, Indian, and South African nationals are most commonly implicated in rhinoceros horn smuggling. Most of the Chinese suspects were arrested in China or South Africa; most of the Vietnamese in Viet Nam or Mozambique. All the Indians arrested were arrested in India, but it is unclear whether the horn they were carrying was of African or Indian origin. All the South Africans associated with seizures recorded in World WISE were arrested in their home country, although, according to the CITES Secretariat, in April 2019 a South African national was arrested in Viet Nam and 13 rhino horns confiscated. Maputo (in the suburb of Matola and

Fig. 18 : Number of poaching incidents in Africa, 2006-2019



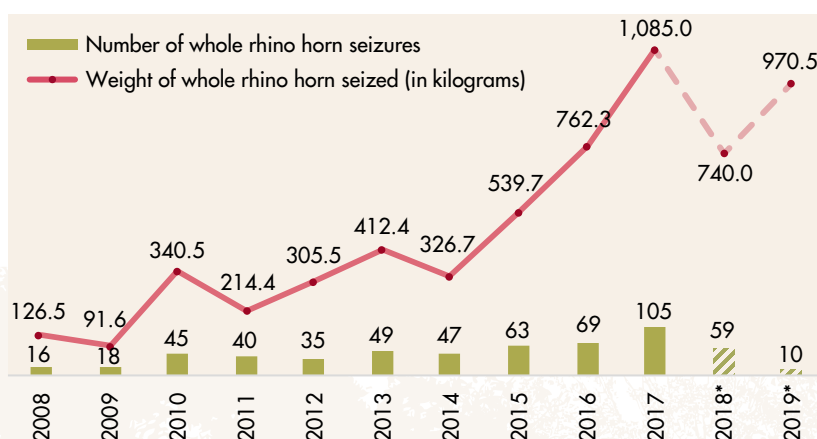
Source: IUCN (Emslie and Knight) and South African Department of Environment, Forestry, and Fisheries.⁶

Fig. 19 : Reported prices paid for rhino horns to poachers in East and Southern Africa, 2010-2018



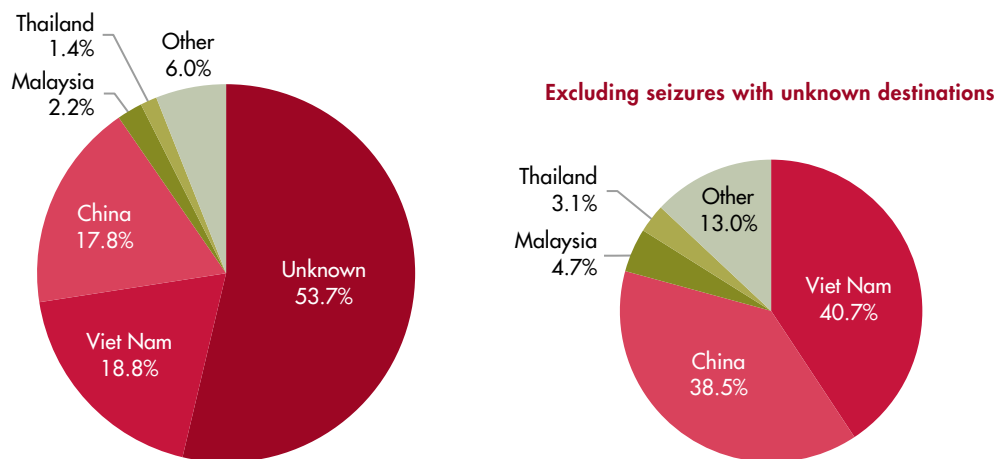
Source: UNODC fieldwork

Fig. 20 : Kilograms of horn seized, 2008-2019



Source: UNODC World WISE Database

* The years 2018 and 2019 are based on partial data.

**Fig. 21** : Reported national destination of rhino horn seizures by weight, 2002-2019

Source: UNODC World WISE Database

at Maputo International Airport), Johannesburg and Hanoi are the three places where the most rhino horn has been seized.

More recent seizures found in World WISE include the following:

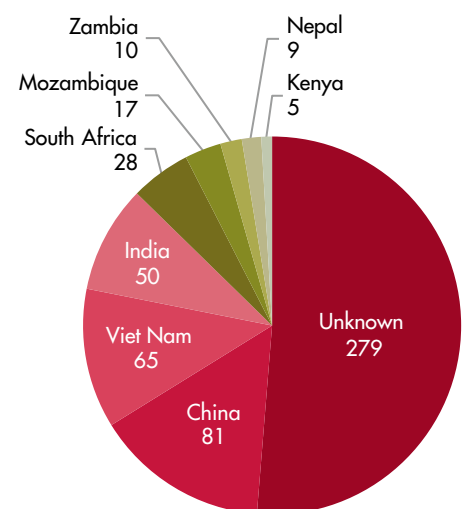
- On 20 August 2018, 116 kg of rhino horn en route to Viet Nam were seized in Malaysia.
- In January 2019, 116 kg of rhino horn en route to Dubai were seized in South Africa.
- On 8 February 2019, 21 rhino horns coming from South Africa and en route to Viet Nam were seized in Istanbul, Turkey.
- On 14 February 2019, 40 kg of rhino horn coming from South Africa and en route to Viet Nam was seized in Hong Kong, China.
- On 5 April 2019, 82.5 kg rhino horn from South Africa and en route to Malaysia were seized in Hong Kong, China.

Since most of these seizures took place in the first quarter of 2019 and amounted to almost 500 kg, the year is on track to be another record year for rhino horn seizures.⁹ At the same time, poaching is clearly declining.

If the 600 rhinos poached in South Africa in 2019 all bore five kilograms of horn, then about three tons would have generated that year, and more than one-sixth of that total would have been seized in just the five seizures detailed above. Just like ivory, the conclusion is that either the rate of interdiction has gone up or that a non-poaching source of rhino horn must be feeding the market, such as stockpiles.

Destination markets

Based on trafficking data, most rhino horn is destined for the consumer markets in China and Viet Nam. Recent market surveys have shown that, similar to ivory, demand for rhino horn in Viet Nam often involves Chinese nationals seeking to move the product to China. These surveys indicate a growing demand for rhino horn jewellery and décor items, including traditional libation bowls, rather than medicine. Also similar to elephant ivory, the prices paid for rhino horn appear to be in decline in Viet Nam since around 2014 or 2015.¹⁰

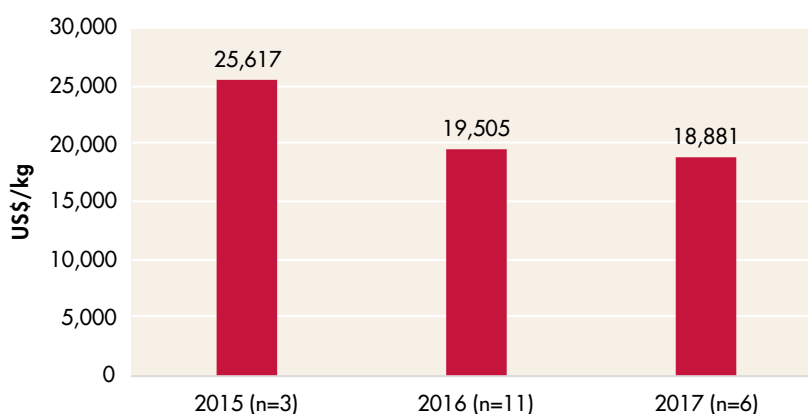
Fig. 22 : Number of people arrested for rhino horn trafficking by citizenship, 2010-2017

Source: UNODC World WISE Database

Analysis

It is too soon to confirm a decline in the rhino horn market. Like ivory, declines in new supply (poaching) seem to be teamed with declines in price in the destination markets. Unlike ivory, seizures show a clear and consistent upward trend. This could be due to improvements in the rate of interdiction or a genuine increase in the flow. If the flow has increased as poaching has decreased, this could suggest the new supply is coming from existing stocks. Many of these stockpiles are in private hands and can be sold in some range states. Sellers may be motivated by declining prices and possibly declining interest.

Fig. 23 Average wholesale prices of whole rhino horn observed in markets in Viet Nam, 2015-2017



Source: Wildlife Justice Commission¹¹

'n' refers to the number of market observations in each year factored into this average price

Endnotes

- 1 There are two species of African rhinos, white and black. White rhinos carry more horn than black rhinos: 5.88 kg of horn per white rhino versus 2.65 kg for black rhinos. See Pienaar, D. J., Hall-Martin, A. J. and Hitchins, P. M., 'Horn growth rates of free-ranging white and black rhinoceros', *Koedoe*, Vol 34, No 2, 1991, pp. 97-105. But no distinction is made between the two species by horn traffickers and the species is rarely identified in the seizure records. For these reasons, no distinction is made between the two species in this chapter.
- 2 This includes 18,067 white rhinos (86% of which are found in South Africa) and 5,495 black rhinos (37% of which are found in South Africa and 34% in Namibia) as of 2017. Other countries with significant rhino populations include Kenya (1,258 rhinos), Zimbabwe (887 rhinos) and Botswana (502 rhinos). Lesser populations are found in Eswatini, Malawi, Mozambique, Rwanda, Uganda, United Republic of Tanzania and Zambia. See CITES CoP18, Doc. 83.1, Annex 2, p. 2 (2019), *Species specific matters: Rhinoceroses (Rhinocerotidae spp.)*, Report of the Standing Committee and the Secretariat.
- 3 Nearly half (49.3%) of the continental white rhino population is now privately owned.
- 4 CITES CoP18, Doc. 83.1, p. 9 and Annex 2, p. 5 (2019), *Species specific matters: Rhinoceroses (Rhinocerotidae spp.)*, Report of the Standing Committee and the Secretariat.
- 5 For example, South Africa's largest private rhino breeder has posted his accounts on-line reporting that security alone was costing US\$400,000 per month. Save the Rhino, *World's largest 'rhino farm' at risk of collapse*, 19 June 2018 (available at: <https://www.savetherhino.org/thorny-issues/rhino-farm-at-risk-of-collapse/>).
- 6 CITES CoP18, Doc. 83.1, p. 7. Data from 2018 include projected values for "other" countries. South African data for 2019 were announced on 3 February 2020 (South Africa, Department of Environment, Forestry and Fisheries, *Department of Environment, Forestry and Fisheries report back on rhino poaching in South Africa in 2019*, press release, 3 February 2020.) Estimates for other countries are not available, although media reports suggest poaching in Botswana has increased.
- 7 See para. 27 in CITES CoP18, Doc. 83.1 (2019), *Species specific matters: Rhinoceroses (Rhinocerotidae spp.)*, Report of the Standing Committee and the Secretariat for more discussion of this trend.
- 8 Out of 350 rhino horn seizures.
- 9 Media reports suggest this trend continued through the first half of the year. For example, on 13 April 2019, 167 rhino horns sourced from a private stockpile and destined for South-East Asian markets were seized in South Africa. On 17 June 2019, 246 kg of rhino horn were seized on a ship in coastal waters of Guangdong. On 25 July 2019, 55 rhino horns weighing 125 kg were seized at Noi Bai International Airport in Viet Nam.
- 10 Stoner, S., Verheij, P. and Jun Wu, M., *Black Business: Illegal Rhino Horn Trade Dynamics in Nhi Khe, Viet Nam from a Criminal Perspective, A Case Study*, Wildlife Justice Commission, 2017.
- 11 Ibid.